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through the geniculate bodies and thalamus, according to Bellonci, give off at most fine branches to the cells of these parts, but do not lose their identity, whereas when the fibers reach the corpus opticum they branch, forming a profuse network, and there really terminate. The criterion of termination is then, for Bellonci, the formation of a fine network and the consequent loss of identity.

At first sight these results appear quite revolutionary, but it is not impossible to harmonize them with the current views based on other methods. The author, however, recognizes that his work bears on the problem from but a single stand-point, and that the true conclusion can be reached only after the matter has been tested from every side. The structure of the corpus opticum is fundamentally similar in all the types.

A nucleus of varying value and position, sometimes covered by the corpus opticum and sometimes exposed, forms his corpus posterius, which he clearly shows to be the homologue of the corpus quadrigeminum posterius in man. The commissura posterior of v. Gudden appears to end here after passing through the internal geniculate body, into connection with which some authors have previously brought it. The optic region in the birds was found to conform with the type shown in the teleosts rather than with that found in the reptiles and batrachia. In no case is any mention made of an uncrossed bundle of fibers in the optic tract such as exists in the higher mammals. This negative point is of interest, since the method used was well fitted to demonstrate the bundle if it was present in the small mammals—mouse, rat, guinea-pig, etc., which were studied. The manuscript and plates were completed in 1885, but for some unexplained reason have been delayed in publication.

Beiträge zur Kenntniss der Sehnervenkreuzung. J. SINGER und E. MÜNZER. Denkschr. d. Mathematisch-Naturwissensch. Classe d. Kais. Akad. d. Wissensch. zu Wien, Bd. LV, S. 163, 1888. Abstract by Steinach, Centralbl. f. Physiologie, No. 25, März, 1889.

Michel's paper (Festschrift zum 70 Geburtstage Kölliker's, Würzburg, 1887) has recently reopened the discussion on the partial decussation of the optic fibers. The authors have again taken up the problem, and by the aid of a new method, first described by Marchi and Algeri, have obtained some important results. The point of the method consists in treating small pieces of the tissue, in the early stages of Wallerian degeneration, first with Müller's fluid and then with a mixture of Müller's and osmic, with the result of tinging the normal nerve fibers light brown, whereas those undergoing degeneration appear intensely black. The course of the optic fibers was studied in the pigeon, owl, guinea-pig, white mouse, rabbit, dog and cat, the procedure being to enucleate one eye, kill the animal at the end of two or three weeks, and then study sections of the optic fibers through their entire course. It appears that the decussation is a total one in the pigeon, owl, white mouse and guinea-pig (a result quite in agreement with that of Bellonci noted above), while in the rabbit, dog and cat it is partial, the uncrossed bundle increasing in size in these animals in the order in which they are named. They further show that the uncrossed fibers do not normally form a bundle, but are scattered among the others. When,

however, the nerve of one eye is caused to atrophy, the corresponding optic tract still contains the uncrossed fibers for the remaining eye. Owing now to the atrophy of the bulk of the fibers in this tract, the fibers remaining aggregate, and thus do form a bundle in such a specimen. It was this appearance which led v. Gudden and Ganser to describe these fibers as forming a bundle in the normal animal.

Ueber die Chiasma Nervorum opticorum des Menschen. ST. BERNHEIMER. Bericht über den VII intern. Ophthalm. Congr. zu Heidelberg, 1888, S. 317. Abstract by Steinach, Centralbl. f. Physiologie, No. 25, März, 1889.

The same problem is attacked by Bernheimer by quite another method. He has studied the development of the medullary sheath of the optic fibers in foetuses and young infants. Before the 30th week of embryonic life, the medullary sheaths are undeveloped, and the chiasma at this period is formed by a network of axis cylinders imbedded in vascular connective tissue. Not until the 30th week do branched particles, staining by Weigert's method, appear. In older embryos these gradually become larger and more branched and finally fuse, thus marking out very fine medullated fibers. These latter increase both in size and number during the remainder of intra-uterine life, but it is not until the second or third week of extra-uterine life that a section is made up of fibers all of which are medullated; these in turn increase in diameter up to the end of the first year of infancy. In this last stage the fibers are too numerous and interwoven to permit the observation of the course of single fibers. If, however, complete series of thin sections are examined from specimens between the 30th week of intra-uterine and the 3d week of extra-uterine life, there are always to be found fibers which enter the right optic tract from the right nerve and the left from the left, *i. e.* do not decussate. They run mainly in the dorsal half of the chiasma.

Aneurism of an Anomalous Artery causing Antero-Posterior Division of the Chiasm of the Optic Nerves, and producing Bitemporal Hemianopsia. S. WEIR MITCHELL. Journ. of Nervous and Mental Diseases, Jan., 1889.

In 1886 a man of 43 years presented himself as a patient, exhibiting as chief symptoms fatigue after unusual exertion, a tendency to numbness in the limbs, and, for a year previous, varying and gradually increasing pain in the parietal and vertex regions. An examination of the eyes showed complete anaesthesia of the nasal half of each retina. The color sense was unimpaired. The diagnosis was pressure in front of the chiasma, sufficient to cut off the connection between the inner halves of each retina, with partial atrophy, especially in the left nerve, inferred from the diminished acuteness of vision. The headaches continued, and later there was at times a passing sense of mental confusion. In May, 1887, he died suddenly, having been for some hours comatose.

At the autopsy the optic nerves were found separated fully an inch by a large tumor that lay directly between them. The tumor had apparently destroyed the chiasma and pressed deeply into the brain substance in the middle line, though not adherent to it. The two internal carotids were found intimately connected with and appa-